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ABSTRACT

This semi-annual publication is concerned with sharing ideas on childhood education by printing: 1) articles which deal, in layman's terms, with all areas of study representing artists, mathematicians, biologists, physicists, philosophers, and teachers of children; 2) letters from readers on topics of general interest; and, 3) reviews of timely books, films, or other materials. In this issue, articles are devoted to: 1) art teaching; 2) a Sioux Reservation learning center, 3) educational language games, 4) excerpts from Plato, 5) curriculum content and the teaching-learning process; 6) a conversation with a child; and 7) a book review. Notes on contributors are included. Those interested in receiving the newsletter regularly should request that their name be placed on the mailing list. (Author/JSB)

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OUTLOOK

MOUNTAIN VIEW CENTER FOR ENVIRONMENTAL EDUCATION

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OUTLOOK

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The photographs on pages 12, 13, 14, 15 and 35 are from Ektachrome transparencies, and were taken by Tony Kallet, with the exception of the bottom photograph on page 14, which was taken by Dorothy Paull.

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THE FIRST PAGE

We are new at publishing a periodical, and in our innocence we have been surprised by the voracious appetite with which OUTLOOK seems to have been born. It fairly devours articles. While we don't, of course, want a fat and flabby magazine, we do want a robust one, and we cannot feed OUTLOOK without help.

"Circumstances beyond our control" may have prevented some contributions intended for this issue of OUTLOOK from reaching us. Deep in the British postal system there may be a fine article by one of our forty-odd British readers and, if so, it is no doubt just now being postmarked and dispatched. There also seems to have been an unduly long interval between the mailing of Issue One in Boulder and its delivery in cities around the United States. Many would-be contributors may only recently have learned that there is something to contribute to.

As we said in our introduction to the first issue, only time and articles can define OUTLOOK's scope. With this second issue the scope is broadened. We print: reflections on art teaching by an art teacher; a fragment of conversation with a small boy encountered at a bus stop; a word-and-picture report on a learning center in Manderson, South Dakota, on the Pine Ridge Sioux Reservation; a non-ornithological discussion of a bird; a biassed and biting reflection on elementary education by a writer for whom the topic has not slipped hopelessly far into the past; some suggestions for getting more fun out of the English language; a timely contribution by Plato, who shares his thoughts on knowledge and the written word; and a review of one of the best books about a large subject to have appeared in a long time.

There are at least three kinds of contributions from readers that we would especially like to solicit for future issues of OUTLOOK, in addition to material of the sort we have already published and material we have not yet thought of. First, we would like to print articles which deal, in layman's terms, with any of the areas of study represented by our readers, among whom are artists, mathematicians, biologists, physicists, philosophers and, of course, teachers of children. Such articles, which should be of general interest, of course, need not have a specifically educational cast. An example of what we have in mind is "The Effect of Size on the Equipment," which we published in our first issue, and which was a general and highly entertaining discussion of scaling. We hope that our readers in the arts and sciences will not be chary of sharing their thoughts with us simply because the last word in our name is "Education." This is, after all, a very broad term.

Second, we would like to print letters from readers on any topics of general interest, whether they arise out of material which has appeared in OUTLOOK or whether they raise new subjects for discussion.

Finally, we would also like either suggestions of books, films, or other material which we might review or the reviews themselves. We are most interested in reviews of items which might slip by our readers' attention and should not.

NOTES ON THE CONTRIBUTORS

Brenda S. Engel teaches art and related subjects at Hanscom Primary School in Lincoln, Massachusetts. Mrs. Engel is herself a water-colorist and ceramist. She is married to the novelist Monroe Engel, who also teaches English at Harvard.

Howard Goldsmith is an editorial writer in New York City, with a background in clinical psychology. He has had a long-standing interest in observing, studying, and writing about children.

David Hawkins is Professor of Philosophy at the University of Colorado and Director of the Mountain View Center. For two years he was director of the Elementary Science Study and he has written many articles on primary education. He is the author of The Language of Nature, essays in the philosophy of science.

Barry Sevett is a freshman enrolled in the Sewell Hall Residential Academic Program at the University of Colorado. His essay was written as a term paper for a course, "The World of Childhood," offered last autumn by the staff of the Mountain View Center.

Tony Kallet is on the staff of the Mountain View Center. His work is mainly in music, but he also takes charge of fun and games with the English language which means, primarily, puns.

John Paull is on leave this year from his job as Field Study Adviser in Leicestershire, England. He is on the staff of the Mountain View Center and will return to England in the summer.

TEACHING ART IN A PUBLIC SCHOOL

Brenda S. Engel

After many years of attending private schools, an even greater number of years of sending my children to private schools, and then five years of teaching art in a private school, I felt a strong need to dissociate myself from the special privileges of what is now called, in an attempt to sound more positive, "independent school education," and to teach in a public school. I was armed with a fair amount of practical know-how, and some experience with gentle, responsive children at the Cambridge Friends School. I also had a set of innocent prejudices, some of which turned out to be reasonably accurate and some of which did not. I wanted to get out from behind the ivy and deal with "real" people, "real" meaning representative of larger rather than smaller segments of society.

The first public school job I was offered which seemed to allow the possibility of innovation was in a school run by the town of Lincoln (a suburb of Boston) for the children of personnel at the Hanscom Air Force Base. I sensed that there I might be able to have an effect on the system, and not remain indefinitely boxed into a tight, formal situation. And this feeling turned out to be accurate.

When, years before, I accepted the job at The Cambridge Friends School I was concerned about my ability to manage groups of children. I wrote the director of the school to this effect, and got back from him a letter which said, "Mary /the other art teacher/ asked me when she first started teaching art, 'What about discipline?' I said to her, 'Don't worry about discipline. I'll be teaching in the next room and in case there is any trouble I'll be there to help.'" In fact, everyone was there to help, and one felt supported, liked, encouraged to participate in the making of a good school. It was a pleasant and at times exciting job. But I wanted to do two things. First of all, I wanted to teach a group of children as well and imaginatively as I could. The Cambridge Friends School was an ideal place for this. But second, I also wanted to be able to make general statements about art education, and here my experience was inadequate. People too often said such things as, "That's an interesting idea, but it would never be feasible in a public school." Public school children took on all kinds of frightening qualities in my mind. Not only were there always more of them in any class, room, school, or area, but they were also less bright, more aggressive, more destructive, less responsive, and less responsible.

In the fall of 1969 I went to teach art three days a week at Hanscom Primary School. My schedule is described in the following notes which I made in November of that year:

> I teach art three days a week, four classes each day. Each class is scheduled for one hour in the art room and there are from fifteen to forty-five minutes between classes. The classes average about twenty-five children. I arrive at the school about eight o'clock, in order to prepare for the first class at eight forty-five, and I leave at about a quarter to four in the afternoon. In the time between classes I finish

any necessary cleaning up, wash paint brushes (there is only one small sink in the room) and straighten supplies. I also make notes on the class that has just left and read over notes on the one that is about to arrive."

This schedule meant that in one day about one hundred children worked in the art room and in three days, three hundred. It took me a long time before I could tell them apart; they all seemed to have the same names. This experience is not at all unusual and many art teachers, indeed, handle six or seven such classes in one day. But I hated the tight scheduling, hated turning the kids on at the beginning and then forcing them to stop early enough to clean up toward the end.

Because of space problems the art room was isolated from the rest of the school. The children were conducted to my domain, neatly lined up and not talking, by their homeroom teacher. These one-minute glimpses of teachers cautioning the children as they brought them into the room and admiring their work when they came to collect them an hour later were virtually my only adult human contacts. If I had time to eat lunch at all I certainly didn't have time to go to the faculty room and sit down to eat with the other teachers. And, perhaps worst of all, instead of friendly, supportive conversation with colleagues, I received a daily bulletin, mimeographed in blue. Nevertheless, in addition to the satisfaction of finally dealing with a wider range of children, I was also happy that I could, despite the limitations, run an individualized program, with a choice of many activities. And the children began to respond to the choices. I could have clay, painting, construction, typewriting, sewing, and printing all going on simultaneously, and much good and interesting work was being done. The children, by and large, enjoyed art although I continued to have probelms with discipline, particularly with first grade classes which were brought in the afternoon from a different building by bus, and were keyed up to the point where I could control them only by abandoning my natural style of teaching and forcing myself to become someone quite different. Even when I tried, in desperation, to do this, I wasn't very successful. The first graders continued to run around the room, screech, throw clay, paint each other. I dreaded those classes.

But, oddly enough, I was enjoying guilt-free spending of money on supplies. I had had less money per pupil to spend at Friends, and there had felt vaguely uncomfortable at what I did spend. This feeling was, I suppose, illogical; parents willing and able to pay for private schools generally do so at no great sacrifice, and one should be able to spend their money with pleasure. But in Lincoln the impersonality of the public school system helped rather than chilled, and I happily converted anonymous tax payers' money into paper, paint, clay, and even luxury items like magic markers.

Around November of that first year I began to make notes, in order to relieve myself of feelings and frustrations that my husband had to listen to nightly. At the same time, I issued frequent communiques to both the superintendent and the principal of my school about possible changes that could be made in the art program. I tried to keep these unasked-for essays objective, uncomplaining in tone and, above all, hopeful and optimistic. I felt hopeful because of the feedback from the children, a sense that the school

was headed toward a less structured program in general, and the continued support of the superintendent of schools. I want to quote from various memoranda written in the course of the year, none of which, except the last one, had any immediate effect.

November 1969. I tried to question some of the standard practices and assumptions and suggested solutions which I innocently thought might be adopted:

An art teacher can have three main functions:

1. To cooperate as a technical expert, giving advice on materials, obtaining and supplying them and suggesting ideas and further uses of the materials.

2. As a critic, encouraging the children, looking carefully at their work and helping them to look at it and to assess and learn from each other's work.

3. As an integrating agent, bridging the gaps among the separate subjects and demonstrating connections.

Questions:

1. Art materials in homerooms?

2. Do children need to all arrive at the same time?

3. Is one hour of art enough for all children, too much for some?

4. Would it be good to mix different classes?

5. Could there be long, ongoing studio periods (three hours) during which some children come and go from various classes?

6. Scheduling problems?

This is a proposal for a rearrangement and reconception of the Primary School art program. It is based on the assumption of six time spans a week: Monday, Tuesday and Thursday mornings and afternoons. Leaving an hour free in the middle of the day for lunch, there would be five hours of actual teaching time per day, two and a half hours each in the morning and the afternoon. Of these six timespans, four would be planned as open studio periods and two as times for the art teacher to visit classrooms, and to provide scheduled periods for the two Center School first grades /housed in a separate building several miles away/.

Some advantages of the proposed art program:

1. Independence encouraged.

2. Fewer problems of discipline due to nature of groups, breaking up of whole classes.

3. More flexibility possible.

4. Closer connection between art and rest of curriculum.

5. Less difficulty with clean-up (fewer children trying to get to single sink at the same time).

6. Longer, uninterrupted periods of attention possible.

7. Economy of art room time (less stopping and starting with between-class intervals).

8. Less pressure on children with resulting sense of leisure and involvement possible.

December, 1969. A slightly desperate note appears at this point to which, as I remember, there was no response at all.

> Three hundred primary school children can obviously not be taught art effectively by one teacher in a three-day-a-week program. More personnel is needed. There seem to me to be two good possibilities:
>
> 1. An additional art teacher could be employed for a day and a half a week who could take on one third of the classes, thus making possible a more flexible program for all classes.
>
> 2. A teacher's aide could be employed for twelve hours a week to relieve the homeroom teachers an hour per week. /The assumption was that this would substitute for the hour the homeroom teacher usually had off during art and that she would stay with the children during the art periods./ This would make possible a studio-type program making maximum use of the art teacher's time by dividing the classes into smaller and more flexible groups. This plan was suggested earlier. Every child would not have art in the art room each week but would have the possibility of longer art periods in more mixed groups. Hopefully, there would be more carry-over art activity in the classroom.

January, 1970. With half the year over, I began to give up hope of present changes, and to look to the future:

> Clean-up is necessarily slow as much confusion results from the fact that everyone has to clean up simultaneously and there is only one sink in the present art room. . . . in addition, I have felt the art program to be both physically and intellectually isolated from the rest of the

> Primary School. . . .a further disadvantage of the present arrangement is that it works against real commitment and involvement on the part of the children. . . .I would like to suggest three steps that would lead in the direction of a more exciting and creative art program. . . .

February, 1970. An encouraging note from the superintendent of schools: "I have nothing but admiration for your ideas in art and they apply equally to other areas of the curriculum as well. Don't think that you will win easily, however, and don't set yourself too short a time scale. A lot is possible so don't get discouraged." So I kept trying:

General aims of the art program (not in order of importance):

1. To provide a positive and pleasurable experience for children which will encourage them to feel self-confidence in this area.

2. To encourage belief in the relevance of art as a means of expression and communication, to sense the connections and overlapping of areas of learning.

3. To increase esthetic awareness and sensibility.

4. To provide one kind of divergent learning experience where various solutions to a problem are equally valid, as contrasted with convergent learning (*arithmetic, spelling etc.*).

5. To teach techniques, improve skills and coordination, and offer basic experiences.

6. To encourage children to make choices and act independently, with self-respect.

7. To encourage concentrated involvement, longer attention spans.

Some ways in which the art program has succeeded. . . .enthusiasm. . . .involvement on part of children, imaginative and exciting work. . . .progress in making choices. . . .and acting independently. . . .new techniques. . . .natural overlapping into other areas. . . .

Some ways in which the art program failed. . . .sense of pressure and frustration due to one hour periods. . . .have to be ordered to stop work. . . .clean up grudgingly. . . .after a certain amount of frustration and interruption, children learn not to allow themselves to become involved. . . .discipline and order difficult. . . .large scale, extended projects impossible . . . .my frustration and sense of pressure. . . .time and facilities wasted. . . .one hour of art a week is not only an inadequate amount for young children but, as scheduled, was far

> too contained and removed from other schoolwork. . . .most classroom teachers did very little art themselves or with their classes. . . .the art teacher takes on the role of relief teacher while the classroom teacher disqualifies himself from this entire area of learning. . . .

March, 1970. Now I offered a serious and workable plan for the following year behind which I took a stand and which, in fact, became the basis of the new program:

> Suggestions for 1970-71 art program:
>
> 1. Two part-time art teachers, each present three days a week.
>
> 2. No six-year-olds to come to art room but, instead, classroom teachers to be supported in ongoing art program in room, kept supplied by art teacher with materials and ideas.
>
> 3. Art teachers to participate in classroom academic activities whenever possible.
>
> 4. Teachers encouraged to remain in art room during art periods and, hopefully, to participate. This is not to be regarded as time off.
>
> 5. Nine studio periods (of about two-and-a-half hours each) a week to be allocated to second and third grades located at Hanscom.
>
> 6. Occasional workshops to be offered by art teachers to staff for their own enrichment, not as pedagogical materials.

April, 1970. Either a change would be made or I would leave:

> I'm writing this to tell you that I'm holding off signing my contract until I can have a word with you and receive some assurances personally that the art program can be changed next year in accordance with the ideas I outlined for you a few weeks ago. . . .
>
> Obviously this a mild form of blackmail and I hate to apply pressure, I think, however, it's justified in this instance. . . .

May, 1970. The atmosphere continued to change toward less structure. The principal made a trip to England and came back much impressed with the art work done in the primary schools. Assurances were received and I made out a detailed schedule based on two part-time art teachers:

> The enclosed is a tentative outline for scheduling the resource or workroom. . . .

February, 1971. The art room has now been moved to a small building adjoining the Primary School. The children don't come in lines any more and discipline problems have virtually disappeared. I'm enjoying the teaching very much and so is the other art teacher. We've made a lot of progress toward integration of art with the rest of the curriculum and, although there's a lot more progress to be made, nothing seems impossible.

AN EXCERPT FROM A LETTER

Howard Goldsmith

As I was waiting for a bus today a three-year-old boy came up to me, tossing curly locks, and holding out a fist-filling Spalding.

"Ball," he announced, inviting my companionship.

"Does it bounce?" I asked.

He looked puzzled. I made a bouncing motion, which he promptly imitated. The ball dribbled off in all directions, eluding his windmill arms, until it came to a stop near the curb.

"Ball bounce," he said.

He picked up the ball and tucked it inside his sweater. "Hiding," he said.

"Oh, you're hiding it," I said. "But I can see it through the hole in your sweater."

He looked down at his sweater, and poked a finger through the hole. "Hiding---hole," he said.

He shifted the ball further down until it bulged out like an overstocked belly.

"Hiding," he said.

"Now you've hidden it," I said. "Where can it be?"

He pulled up his sweater and revealed the ball with the bravura of Mandrake producing a rabbit.

This was our new game, and he surely would have continued it indefinitely if my bus hadn't come.

"I have to take the bus," I said.

"Why bus?" he asked, disappointed.

"Because I live down there," I said, making a wide, sweeping gesture with my hand.

"Why bus?" he repeated.

"I have to go now," I said, moving toward the bus, while looking back continuously over my shoulder.

"Hiding," he said, pointing toward his sweater.

"Bye," I called, waving my hand.

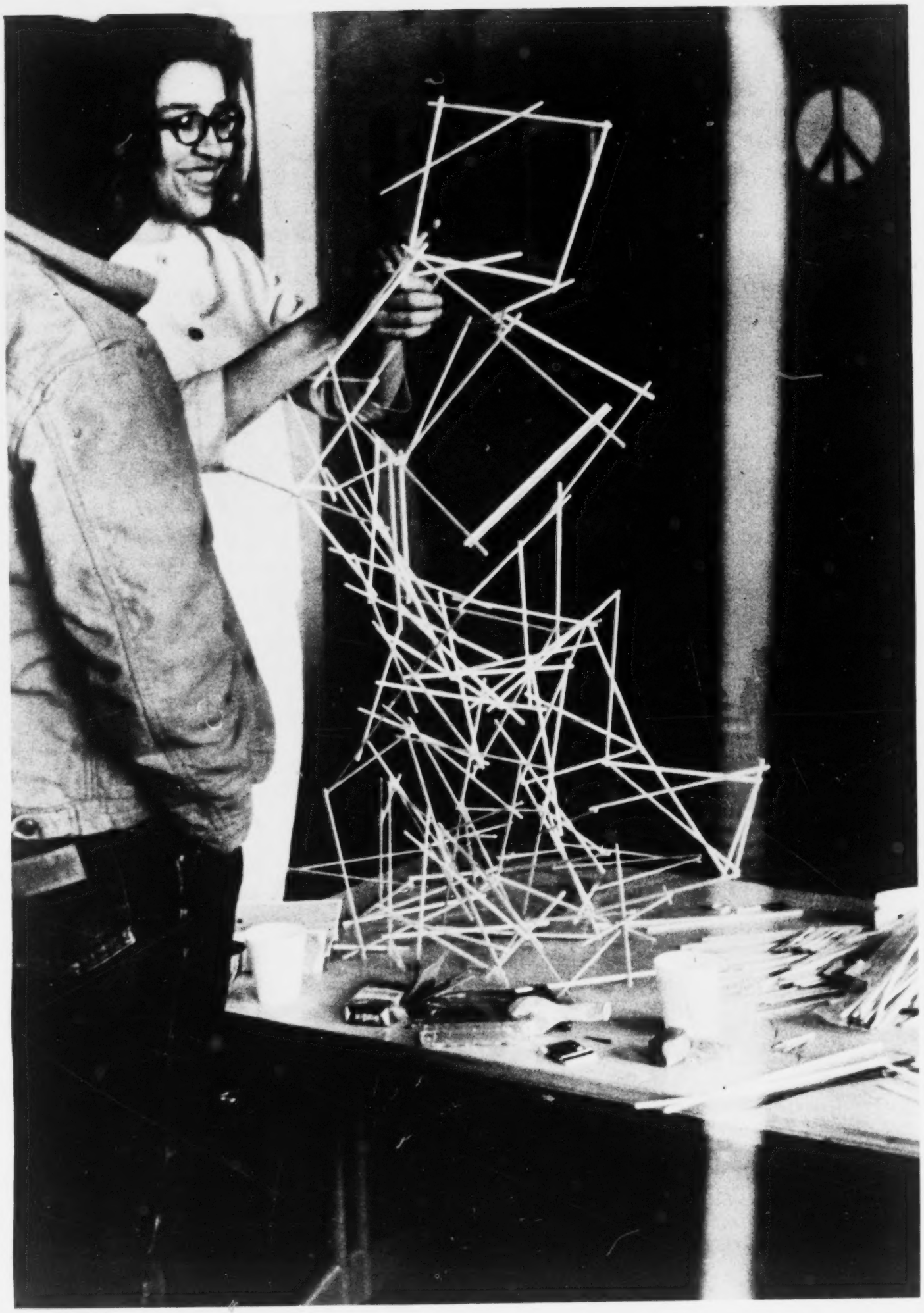
"Bye," he answered, waving back, and as he did the ball slipped out of his sleeve.

THE LEARNING CENTER IN MANDERSON

The staff of the Mountain View Center has become involved over the past few months in working with Sioux Indians and VISTA volunteers to create a learning center in Manderson, South Dakota, on the Pine Ridge Sioux Reservation.

In Manderson an Indian School Board now serves in an advisory capacity. It is the policy of the Tribal Council, and of the Bureau of Indian Affairs, for the Sioux eventually to take control of their own education. Our participation was requested both by the VISTA volunteers and by the Manderson school board members who have visited the Mountain View Center at least once. We are helping to run a course in Manderson on alternate Saturdays, open to those Sioux and VISTA volunteers who are seeking credit toward becoming certified teachers. There have been four course meetings in Manderson to date, and these will continue throughout this school year. Approximately twenty students are enrolled, most of them Sioux.

The pictures on the next four pages were taken during the second course meeting, and show some of the variety of activities underway that day. What is done on a given Saturday depends in part on what is requested and in part on which Mountain View staff members go to Manderson. (About half the staff goes each time.) Every attempt is made to extend the resources available to include the rich surroundings and the rich store of knowledge and skills which the participants possess. On the day these pictures were taken, in early February, all work was done indoors because the outside temperature was below zero.

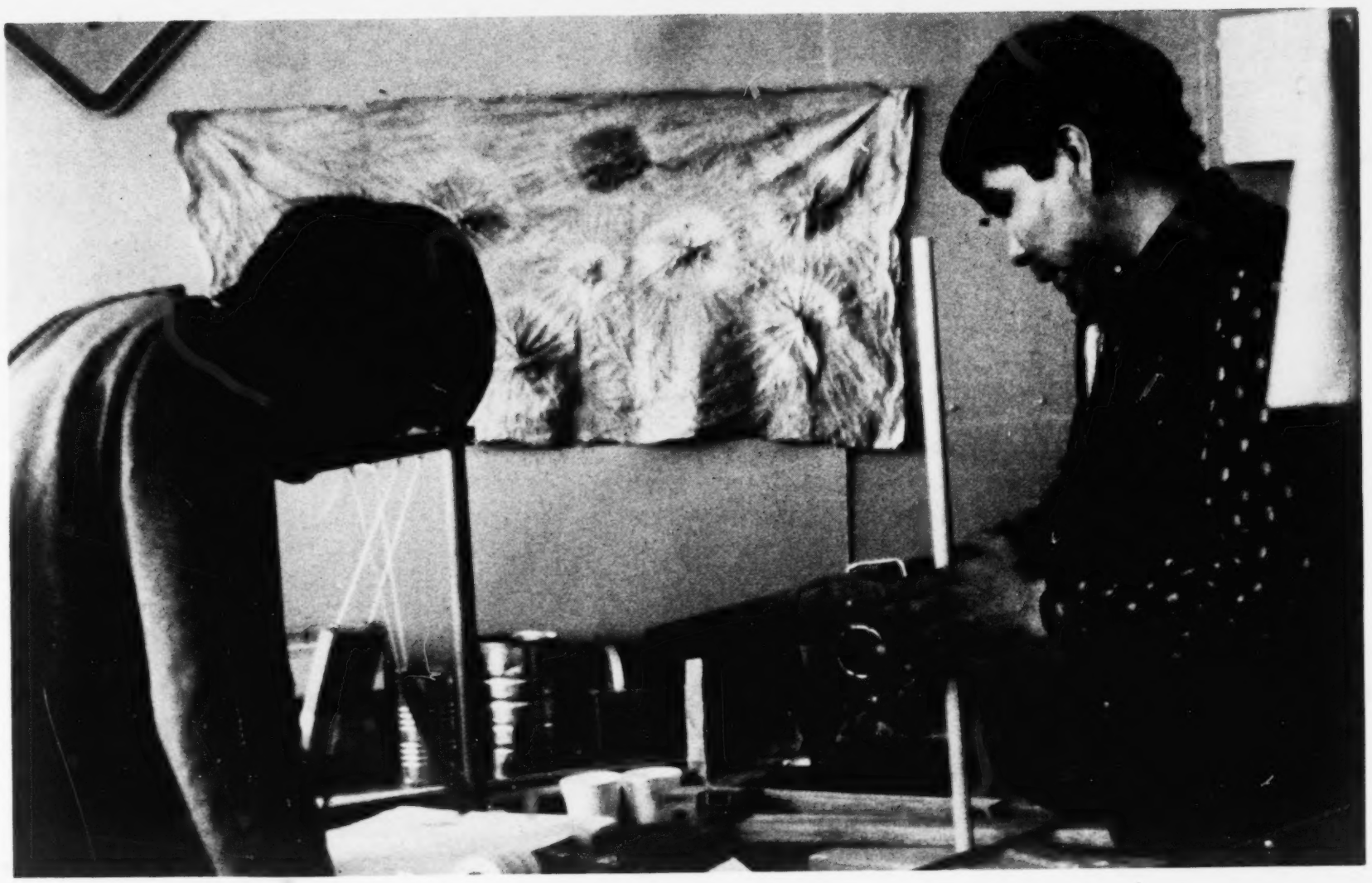


The joys of asymmetry--a straw-and-pin tower

Cutting electrical conduit tubing to make a metal xylophone

Trying it out - the cut lengths of pipe are laid on hollow rubber tubing which is staples to a wooden base

Testing a telephone connection



Testing a homemade anemometer with a hair-drier hurricane

Making a macramé belt

THE BIRD IN THE WINDOW

David Hawkins

There was a time, I think, when the word "curriculum" didn't mean what it means now. In the United States a curriculum is apt to mean the whole works, curriculum, syllabus, timetable, because many groups of people who have been involved in curriculum development have in fact spelled everything out at a level of detail that's almost giving daily instructions to the teacher about what to do next. This means that the choices are not available to the children; the choices are not even available to the teacher unless the teacher is bold enough to disregard the curriculum guide. The choices are made by somebody "up there."

The word "curriculum" used to mean a general outline of subject matter and of areas of competence that children were supposed to be systematically exposed to. You wanted them to understand arithmetic, for example. You didn't list twenty-five number facts for the first three months. That wasn't curriculum. That was something that some teacher might do, but it was no concern of the adult community. The curriculum was primarily a set of decisions by the adult community about what children ought to be learning and how the general aims of education could be made more specific in terms of areas of competence and skill, subject matter and so on.

Dewey, for example, is very strong in asserting that the Experimental School, which he ran for a time, had a definite curriculum and there was no freedom to depart from this curriculum. This was imposed; it was a pattern which could be argued about, it wasn't sacrosanct, but at any given time there was a curriculum and everybody understood what it was. Within this, teachers were enormously free to pursue these general subject-matter situations in any way they wanted to, and it was quite clear, to many of them at least, that an important group involved in making those decisions was the children themselves. I don't know how romanticized they are, it's hard to tell at this distance in time, but if you read some of the accounts of what some teachers and some children in that school did you can see that they were having a great good time making their way through some aspect of the curriculum but diverging all over the place. They were diverging into other areas which were also in the curriculum. Nobody regarded it as a waste of time, therefore, if in the process of studying some primitive society they got heavily involved in the craft of pottery, because that also was part of the curriculum. So, there was great freedom within a general framework that was rather clearly spelled out. I think today we would find this framework to be a bit special and a bit narrow and would perhaps accuse Dewey of being a bit of a traditionalist about some of it. But it was very interesting for me to discover that Dewey in no sense subscribed to the laissez-faire belief that the curriculum was up to the children, so to speak. These were decisions made in the patterning, the organization of the school itself, and in the provisioning of the school. We all make such provisions, don't we? We can't dodge the responsibility for the things we put in classrooms. These are not put there at the request of children - they may be added to at the request of children, they may be subtracted from because children don't use some of them, but that represents our learning and not the direct decision of the children.

One problem we face is that as soon as we talk about self-directed learning this implies, correctly, I think, that we cannot lay out in advance a track that children are going to follow, because we don't yet know the things we will learn, by observing them, which will cause us to make decisions which we haven't yet thought of. Therefore, there is an essential lack of predictability about what's going to happen in a good classroom, not because there is no control, but precisely because there is control of the right kind; precisely because the teacher is basing his decisions on observation of the actual children in their actual situation, their actual problems, their actual interests and the accidental things that happen along the way that nobody can anticipate.

A power-shovel moves in next door to the school: this throws all your plans for studying batteries and bulbs into a cocked hat - or should! But you say, there are many aspects to science and this is also part of the curriculum. You can't anticipate those things. Everyone knows that the best times in teaching have always come as the consequence of some little accident that happened to direct attention in some new way, that revitalized an old interest which has died out or created a brand new interest that you hadn't any notion about how to introduce. Suddenly, there it is. The bird flies in the window and that's the miracle you needed.

Somebody once said about great discoveries in science, "Accidents happen to those that deserve them." If the bird coming in the window is just a nuisance, you don't deserve it, and in fact that never happens. If you do deserve it, the bird <u>will</u> fly in the window, or there'll be a door that opens into the jungle. There will be some romance around the corner which will be there to be captured. This is again something very different from the stereotype of the permissive classroom because what's involved all along is a teacher who is making educational capital out of the interests and choices of children and out of the accidents that happen along the way, as well as out of his own cleverly designed scheme for getting something new into focus. He fails part of the time but sometimes he succeeds. When the school year is over, you say - or at least I used to say in my college teaching - that the best times were the times when we got off onto something that had no relation whatever to the timetable, something that wasn't envisioned but that turned out to have a lot of relevance to what the course was really about. Something I just had never had the wit before to see; it came up accidentally or it came up because of some question or some argument with a student and we got off on a new track and that's when things really came to life. We all know that this is true; we all know that we can't succeed at it all the time or sometimes even very often, but we all also know, I think, that when it does happen it's worth a great deal because in fact far more is learned under those conditions than under conditions of routine presentation of subject matter.

One of the other things one has to fight against is the belief that because the central priority is self-directed learning there is no such thing as instruction or didactic teaching. That's where the word "discipline" comes in because people say, "Yes, that's all very well but what about the discipline of the organized body of knowledge?" Have you come across this one? That's a real question. I'm dealing with the opposition with a light touch but I don't want to say that everything they bring up is just foolish, because I don't think <u>we</u> know the answers to some very important questions

and I think it's foolish to pretend that other people who think they have answers are just completely wrong. It seems to me, and I hope many of you would back me up in this, that there are times - perhaps they have to be defined opportunistically, you can't tell in advance just when they are going to be - there are times when a group of children is very ready to be instructed about something, or is very ready to engage in a set task which might even be rote learning under certain circumstances. Their readiness to do this means that it has become for them a significant choice, and therefore it is by no means violating the principle of choice to say there is room, and sometimes a significant amount of room, for quite formal instruction.

I think the people who advocate formal instruction enormously exaggerate its relative importance in terms of the learning of subject-matter. For example, in mathematics, as far as I can see, the set pattern of the text, whether it be old mathematics or new mathematics, makes very little difference. Some people really believe that the set pattern of the text is <u>the</u> way mathematics is to be learned. Or they might grudgingly admit that there are three or four alternatives, but all of them would be carefully sequenced, outlined series of steps. They say, "But you can't <u>possibly</u> understand multiplication before you understand addition." Well, I haven't thought too much about that but I'm sure it's false. I know one thing that's very common, just to take a little example; for some reason there's a widespread belief that you can't understand subtraction until you understand addition. How can you subtract if you can't add? Well, subtraction, I would suspect, is the more primitive of the two operations. It's easier to think of taking something away from a collection than it is to think of putting two collections together, which is a rather artificial activity that we don't often engage in, whereas we've very often taken candy out of a box, we're depleting a collection by taking things away. I would begin my textbook, if I wrote one (which I'm not going to do) with subtraction and division and then I would introduce multiplication and addition as subsequent and derivative things. The logic is perfectly symmetrical; there is no reason for preferring one to the other from the point of view of the logical organization. Moreover, we all know that learning doesn't have any very close or intimate connection with logical organization. The order in which children come to understand a logical pattern is not by following the logical pattern from the beginning. They don't have it yet so they can't follow it. You can lead them by the nose, but that also means they can't follow it. We all agree there is some body of connective ideas and propositions that vaguely we can call mathematics. Nobody has ever written it all down but it's there; all the logical connections that exist among all the ideas in the area which we agree to call mathematics. There isn't any linear order among them. They're connected in a very complex sort of network and you can make your way through them along thousands of different paths, depending on your monentary readiness, your understanding, your fund of analogies and your interests. You can get into it in many different ways. The obvious thing from the point of view of teaching is to say, well, we want to find that way which is optimal for a particular child at a particular time. This will be in terms of all of the things which characterize him as an individual. We don't know how to do this, we're not omniscient, but one of the very practical ways of getting on with it is to give the child himself some free choice. This doen't mean that he will always, unerringly, choose the way that is best for him but it

means that you will get evidence from his choices that will help you to define a pattern for him that will probably be much more effective than a standard pattern that is distilled out of mass instruction of the past....

/This is an excerpt from a talk given by David Hawkins at the Easter Residential Course, Loughborough, England, April, 1969./

THE EDUCATION GAME

Barry Sevett

Now that I've decided how I will spend my future, I feel that I ought to sit down and explore some of the factors leading up to my decision to become a teacher.

I suppose it must have all started when I first began school in kindergarten, but I really can't remember many details that far back. All I remember about kindergarten through fourth grade is that I really didn't learn much. All my teachers were real sissies. We used to play games, have recess all the time, go on field trips, the kinds of things kids should do on weekends or after school. We'd have Halloween parties, Christmas parties, always wasting time. I remember my third grade teacher pretty well, Mrs. Torron.* Teaching is the last thing she should have been doing. Sometimes she must have thought she was our aunt or something. Always being nice, never yelling. If the class was noisy she'd just ask us, "Please" (can you believe that?) "be quiet." Do you believe that, "Be quiet" and then she'd waste maybe five minutes till we shut up. How the hell is a kid supposed to learn how to subtract that way?

My first recollection of really admiring a teacher was in fifth grade. At the beginning of the year her name was Miss Ward, but she got married on us and became Mrs. Weiderworth, or something like that. Anyway, she was a pretty good teacher. She had one heck of a voice and could shut the whole class up with just one shriek. I was always surprised that she never got hoarse: she shrieked at least twice every hour. Thirty-minute stretches of silence isn't bad for a fifth grade class though. But her real pride and joy was organization. I can still remember our schedule that year because we never once swayed from it or wasted a moment. Reading from 9:00 a.m. till 10:30 a.m., Arithmetic from 10:30 a.m. till 11:30 a.m., and Handwriting from 11:30 a.m. till noon. Lunch was from noon to 12:30 p.m. and recess until 1:00 p.m. Science was 1:00 p.m. to 2:00 p.m. and Social Studies from 2:00 p.m. till 3:00 p.m. From 3:00 p.m. till the end of school was art on Monday and Wednesday, music on Tuesday and Thursday. Friday was clean-up and inspection day. Mrs. Weiderworth kept a tidy, quiet, organized classroom, and it was these traits which made her the successful teacher she was.

When I moved on to the sixth grade I was really worried about what kind of teacher Mrs. Martin would be. I thought sure she would have to be a disappointment after Mrs. Weiderworth. Boy, was I wrong! Mrs. Martin was the best class controller I ever had. That fifth grade class shaped up really quick when they entered sixth grade. Those fifth grade half-hour and hour periods of silence grew to almost half-day periods. And the amazing thing is that Mrs. Martin never had to shriek. With a long hard stare and a few quiet cutting words she could humiliate any delinquent in the class into silence. I remember once when she walked out of the room this troublemaker stood up and pretended he was an auctioneer. Well, Mrs. Martin was smart - as soon as she walked out she stopped and listened to what was going on.

*All names, but only the names, are fictitious.

Then she came, tapped the kid on the back, and stared him down to the brink of tears. Wow, she had some cool. I never saw that guy pretending to be an auctioneer again. In fact, I don't think he said a word in class for two weeks afterwards. That's one way of keeping a well-behaved class.

Another incident I remember well from sixth grade had to do with sex education. Here we are, trying to learn about some of the most intimate aspects of a person's life, the kinds of things you never talk about in public or with girls, and here's poor Mrs. Martin, trying to be a father to the boys and a mother to the girls, distinctly telling us never to talk about what we're learning. Well, this same smart aleck who was the auctioneer thought he had to be cute, so he asks two of the girls in our class if they bleed. As soon as he said it he was really sorry. They went straight to the teacher and told her the whole thing. He started bawling and had to go in the bathroom and wash his eyes out. This was in the morning. All day the jerk was shaking and almost crying, just waiting for the teacher to bawl him out. Finally, in the afternoon, Mrs. Martin called him out of the room. For over half an hour she let him have it in that cool cutting voice of hers. He started crying right at the beginning and was almost in convulsions by the end, so he didn't remember too much of what she said, only that now all the girls would hate him and would tell their mothers and they would hate him too. I have never known a person more effective at molding a real smart-ass into a cooperative student. After all, it's her job to shape kids up before they enter junior high school. They don't allow any monkey business there.

Since I have the desire to teach sixth grade, it must have been Mrs. Martin who inspired me. I do wish I'd known then that I would teach, so I could have paid more attention to her methods. There's a lot of things I'll need to learn before I start teaching. Control of the class is the most important. It's quite a problem to get bratty sixth grade kids to sit still with their mouths shut and their minds open so the teacher can tell them what they need to know. After all, she knows how to do arithmetic and they don't, and how else are they going to find out if they don't listen? The second most important aspect of the classroom is organization. Kids are in school to learn the most they can in the shortest time period possible in order to prepare to be good citizens. There are so many different areas of knowledge, and they obviously must be divided up so there is no confusion as to what is math and what is science and what is art. They are all as important as each other, too, so great pains must be taken not to spend too much time on one subject and not enough on another. I suppose there are quite a few "tricks of the trade" to accomplish these ends that I will have to learn. I only hope that some school of education can mold me into as good a teacher as Mrs. Martin.

FUN AND GAMES WITH THE ENGLISH LANGUAGE

Tony Kallet

Many games can be played with words and sentences which, apart from being fun, may illustrate some of the structural properties of the English language. Of the suggestions which follow some are mine, some are borrowed. The substitution and transformation games were first brought to my attention by David Armington.

1. Sentence expansions and contractions. If you start with any sentence - for example, "The dog ran quickly" - you can make substitutions according to a rule which will expand or contract the sentence. Let's consider expansions first. Suppose that the rule is that two words will be inserted for any one word in the original sentence. "The dog ran quickly" could become "The pink tiger ran quickly," which, in turn, following the same rule, might become "The pink tiger ate pancakes quickly" and then "The pink tiger ate pancakes with ketchup," and so on. There is, of course, no limit to how far the expansion can be carried. A group of ten-year-olds started with a four-word sentence and ended up with a thirty-odd word monster.

One point which emerges from an activity like this (and from many of the games suggested below) is that sense and sentenceness are not the same thing. A sentence may be grammatically and syntactically impeccable and yet be absolute nonsense. I think this is an important, as well as enjoyable, point to make about language.

The converse of the expansion game, contractions, works best if a long sentence is used to start with. I prefer humor in my starting sentences and one which I recall is, "The bowl of ripe fruit balanced dangerously on the end of the diving board while a sheepish banana screwed up its courage for a backwards somersault." Again, a two-word rule can be used; any two consecutive words in the sentence can be removed and replaced by a single word which does not violate sentenceness. With practice it seems possible to reduce most simple sentences to a single word using this rule. When this becomes routine, try substituting a single word for three consecutive words.

It is often more fun, in both the expansion and contraction games, if each new sentence is written out in full. This way the progress (if that is the right word) of the expansion or contraction can be clearly seen. To illustrate the contraction game, let me start with a sentence somewhat shorter than the one above.

Six sad sheep sat silently mourning the midnight moon.
Slippery sheep sat silently mourning the midnight moon.
Slippery sheep sat silently mourning the dawn.
Rupert sat silently mourning the dawn.
Rupert is mourning the dawn.
Stop mourning the dawn.
Behold the dawn!

*This is a revised version of an article which first appeared in the Primary School Broadsheet, Leicestershire, England

Behold Jello!
Oops!

2. Substitutions. For any word in a sentence almost endless substitutions can be made so long as only the sentenceness must be kept inviolate, not the sense. For example, consider the sentence "All boys chop wood cheerfully." The sentence is still correct if "cows" or "teaspoons" are substituted for "boys." It is still a sentence if "muffins" is substituted for "wood," or if "My" replaces "All." In every case, the word to be substituted is tested in the original sentence.

The game might be organized on paper or a blackboard as follows:

All	boys	chop	wood	cheerfully
Some	girls	sing	dirges	dully
Do	cows	invent	poems	gaily
Can	teaspoons	mutilate	muffins	often
Seven	rockets	destroy	crocuses	everywhere
My	teachers	spread	people	dynamically.
(One)	(man)	(pushes)	(rug)	

In parentheses I have indicated some "illegal" substitutions. Looking just at the legal ones, and moving freely through the rows and columns, the possibility for humorous invention is considerable: "Some rockets destroy poems everywhere;" "My teachers invent people often;" "Can cows mutilate crocuses dynamically?" And so it goes.

It is worth noting that nonsense words can be substituted for real words. The sentence "All dooples glip fibbets dabically" sounds very much like an English sentence such as "All boys chop wood cheerfully." It may be interesting to discuss with children why this should be so, and to have them invent other nonsense sentences which correspond to "real" sentences. Another interesting point for discussion can be the difference between the nonsense of "All dooples glip fibbets dabically" and the nonsense of "Boys wood cheerfully chop all."

3. Inventing sentences using random words. With a bit of imagination and a carefree attitude it is possible to use any words at all in a sentence, adding the necessary connecting words and "filler." For example, suppose the words are "can," "sky," filibuster," "pickle," "truck," and "violate." One possibility is: "Can you look at the sky during a filibuster designed to prevent passage of a law saying that any pickle truck can violate all traffic laws?"

A good start for this game can be to have a number of people write down several words each. Collect a word from each person up to a total of, say, three, and ask if anyone can use all three words in a sentence. For example, consider the words "water," "measles" and "naturally." Forgetting about order, one might say that "Water naturally causes measles." If the rules made it necessary to retain the order of the words, the sentence might be "Water should not be drunk if you have contracted measles naturally."

One enjoyable way to obtain large numbers of words, which can be used in this game and others, is to have everyone write down as many words as they

can think of in five minutes. (When asked "can you write down twenty words?" many children, in my experience, react with a horrified, "Oh, no." But once they start they often go on and on and on. It helps to make it clear that correct spelling is not important.) I've found that the long rolls of paper tape used in adding machines are ideal to write such lists on, and they have other uses, as well, some of which I suggest below. When someone has made a long list, have him close his eyes and put a finger down anywhere on the list. Then ask him if he can use the word nearest his finger and the one following it in a sentence. Then try the two following words, then three, etc. I was recently playing this game with some ten- and eleven-year-old children. When we had compiled a list of twenty words I asked if anyone could use them all. No one volunteered, so I demonstrated how it could be done, whereupon one of the boys rattled off a sentence using all the words in reverse order; his story was just as fluently told as mine had been, and even more amusing.

4. The long story. Children and adults alike have had great fun writing long stories - literally long, since they are written lengthwise on adding machine tape, which is cheap and comes in several widths as required. A perfectly ordinary story can become more fun when written out this way, and the length of the tape often encourages the writer to keep going. The resulting tape can be fastened to the wall (perhaps in the corridor) to be read by all. One might suggest writing the longest possible sentence, or a sentence long enough to go all the way around the room.

And then there is what I call the Mobius sentence. If you join with Scotch tape the ends of a three or four foot length of paper tape to which you have given a half turn, you have constructed a Möbius strip. Topologically this is a strip with only one side, as you can easily demonstrate by placing a pencil on it and making a continuous line down the middle. Eventually you will discover that without having ever encountered an edge, you have come back to your starting point - and when you look at the tape what appear to be both sides have been covered, thus proving that "both sides" are in fact only one side. (I don't pretend to understand this but it does work!) Now, the point of all this, as far as writing goes, is that it is possible to invent sentences which come back on themselves, end to beginning, and with care these can be written on a Mobius strip, so that once you start reading you go on and on. Here is one such sentence: "When you stop cantering and dismount, the horse will smile, bow, thank you, and ask politely for a lump of sugar, because he has learned that...." It is also possible to write stories in which the end leads back to the beginning, much in the fashion of the old song, "There's a hole in your bucket, dear Liza."

5. Arranging words in sentences. This game seems especially useful in suggesting some of the features of words which determine their position in sentences. Write down a fairly straightforward sentence (without capitalizing the first letter): "the car sped down the street" might do Cut up the sentence into individual words, tell the person playing the game that there are six words, and then give him one word. Ask him to decide what your sentence might be, based on the one word he has, and to write down his hypothesis. Give him a second word and ask him to place it where he thinks it goes in relation to the first word. Again he should write down what he thinks your sentence is. Continue giving him one word at a time until he has all the words. It may be, of course, that the sentence he finally

arrives at is technically correct but does not make sense: "The street sped down the car." Or he may have a correct sentence that differs from yours: "Down the street sped the car." Are any other variations of a correct sentence possible?

It is clear that the word that one receives first makes a difference in how quickly one's sentences begin to look like the "correct" one. If the first word one gets is "car" one knows more than if the first word is "the." A discussion of this point may help reveal the function of various kinds of words.

6. Inventing words. Why are "bat," "cat," "fat," "hat," "mat," "pat," "rat," "sat," and "vat" all real English words, whereas "dat," for example, is admitted only now and then and "lat," "nat," and "wat" are never allowed? Surely there are thousands of words just waiting to be invented, not just mechanically, as I have done here, but creatively. Why not "crackerfluff" or "tingletalk?" What about "slapish" or "timble?" (A book called Ounce, Dice, Trice, by Alastair Reid, illustrated by Ben Shawn, is devoted largely to the invention of just such words.)

Define "bilp" and draw a "patchpawg."

7. Words as they happen. Sentences, phrases, words, near-words and interesting letter cominations can be found in many places. As part of a general effort to help children enjoy the sounds and shapes of language, they might be encouraged to be on the lookout for oddities. For example, car license plates in England and in some American states consist of three letters and three numerals. Some of the letter combinations are intriguing. I have recently encountered "NUT 355," which leads me to wonder where the other 354 nuts are driving, and "RUT 847" which suggests that the car and driver are well set in their ways.

Signs, often quite baffling to adults, may be even more incomprehensible to children. Ogden Nash has immortalized the familiar "Cross CHILDREN Walk" in a verse the next line of which is "Cheerful CHILDREN Ride." Traveling across the Atlantic on the S.S. United States many years ago I came across a sign bearing the legend, "All dogs must be fully released before opening the hatch." I eventually discovered the true meaning of the message, but meanwhile some delightful images sprang to mind. It may simply be the personal quirk of a perennial punster, but I find it fun to take literally such signs, statements, and the like. Across from my hotel in Cleveland I once noticed "Avenue Cleaners" and was sorry I hadn't any avenues to be cleaned. And in Leicester, England, there is a chain of shops each of which has its name over the front door: "The Three Sisters. Hosiery, Drapery, Linen." I often felt the urge to go in and ask for Miss Drapery.

8. The music of words. Carl Orff's method of helping children make music as well as listen to it employs extensively the sounds and rhythms of words and names. (Of course, many other people, before and after Orff, have also used the cadences of language musically.) The line between "just words" and poetry and music can become blurred and meaningless at times. For example, list a few of the common objects in a kitchen, such as teaspoon, coffeepot, can opener, sink. One can use these words to explore a number of interesting rhythmic effects:

teaspoon
coffeepot
can opener
sink

Translated into musical values, these words might be represented by two quarter notes (teaspoon), two eighths and a quarter (coffeepot), a quarter and triplet eighths (can opener), and an emphatic eighth or sixteenth (sink). Try rearranging the order:

coffeepot
sink
can opener
teaspoon

If you distort "coffeepot" so that the accent comes on the "fee" you are into syncopation. And so on. Any words can be used. Orff gets good results with flower names, trees, and, above all, the names of people. A good start can be made by asking children to produce (on tone bars or a xylophone or a piano) two notes, then sing their own names, distributing the syllables over the two notes in the most natural way. The next step might be to combine two or more names spoken or sung at once.

Two years ago, after I had introduced some of these ideas to a group of teachers, one of the teachers said that on a fine summer's day she and her children had been shelling beans out on the lawn. One of the children had suddenly started chanting, "Green beans, August tenth, 1963," and the others had picked it up until all were in hysterics! There are few sentences that can't be sung.

9. Non-stop speaking and writing. Many people never seem to stop talking, but have you ever set yourself, or children, the task of speaking for a solid minute without pause? The ground rules might be that it doesn't matter what you say; you needn't even make sentences; but you must keep talking. At first people may be reduced to reciting the alphabet or listing the objects in the room. Fine. With some practice, and a willingness to be "silly" if need be, children and adults alike may find that they can become quite fluent. From here it is not too far to writing without stopping for a minute or perhaps even three or five minutes. Again, the ground rules may be that anything goes, and that if nothing comes to mind, letters or numerals may be written down. The semanticist, S. I. Hayakawa, writes that, working with adults, if this exercise is done regularly, many people who have at first had the greatest difficulty become quite fluent in getting something down on paper and, as with speaking, the results gradually become more coherent. (One ten-year-old to whom I proposed this task spent five minutes describing in minute detail everything I did while she was writing!) As with all these games, of course, it is important that this not become a chore, and that there be a certain lightness of touch and spirit, and that the effort be abandoned when it becomes tiresome.

10. Convergence in Webster's. This is a delightful and challenging game invented by Professor Hassler Whitney of the Institute for Advanced Study at Princeton. It is a two-player game in which player A writes down a short sentence (perhaps four words) and player B tries to discover what it

is by constructing test sentences. The game can best be explained by giving an example.

Player A writes down his sentence, making sure that player B cannot see it. Suppose the sentence is:

How fragrant are halibut.

Knowing nothing of player A's sentence except its length, player B writes down his first test sentence:

Monday mornings never pass.

He hands this to player A who compares each of the four test words with the corresponding word in his sentence. If a test word comes before the corresponding word, alphabetically, he writes under it the letter "B". If it comes afterwards, he writes "A". When he hands back the first test sentence it will look like this:

Monday mornings never pass
a a a a

All four of the test words came later in the alphabet than the corresponding words in player A's sentence. Player B, thus, knows something about player A's words. With this knowledge, he constructs a second test sentence:

Good grief, he groaned.

Player A looks at this sentence and puts the letters "b," "a," "a," and "b" under the four words. Player B, in this example, has adopted a useful strategy, which I won't reveal! The game proceeds. Within five or six test sentences it is likely that player B's words will all begin with the correct letters; alphabetizing continues with second letters, then third, etc. When player B eventually hands a sentence to player A which contains a correct word, player A writes an "=" sign under it. The game continues until all words are correct.

I have found that the game is somewhat less frustrating if, when player B correctly identifies a word but presents it in the wrong tense, player A "gives" him the word and corrects the part of tense. When players become more skilled, this may not be necessary. I also find that it is a good idea, at least at first, to rule out proper nouns: the game is difficult enough with fairly simple words until one has had considerable practice. Toward the end of the game, it may be hard to set test sentences which make sense. My advice is not to worry about this in the slightest. Much of the fun of the game, for me at least, comes in trying to make ridiculous test sentences which, nevertheless, serve my purpose.

Prof. Whitney says that on average it takes about fourteen test sentences to identify correctly player A's entire sentence. Interestingly, the number of test sentences needed does not depend on the length of player A's sentence since, in each test, all the words are being tested. After one or two words have been correctly identified, of course, grammar and syntax will help with the remaining words.

11. Place names. A study, light-hearted or serious, of place names can be most rewarding. George R. Stewart has recently written a book, "American Place Names", which gives the origins and some of the lore about thousands of names. I have enjoyed simply making lists of place names which appeal to me. A good source of names is a booklet called "National Zip Codes", which is widely available both in bookstores and at the larger magazine stands, and is published by Larron, Inc., Berrien Springs, Michigan 49103, at one dollar. I don't want to rob anyone of the pleasure of browsing through this booklet, but I can't resist ending this article with a few of my favorite place names: Allgood, Alabama; Bumble Bee, Arizona; Dowdy, Arkansas; Needles, California; Hygiene, Colorado; Howey in the Hills, Florida; Enigma, Georgia; Goodwine, Illinois; Bippus, Indiana; Agenda, Kansas; Head of Grassy, Kentucky; Pippa Passes, Kentucky; Plain Dealing, Louisiana; Meddybumps, Maine; Chance, Maryland; Prides Crossing, Massachusetts; Brutus, Michigan; Tea Garden, Mississippi; Knob Noster, Missouri; Plentywood, Montana; McCool Junction, Nebraska; Parsippany, New Jersey; Horseheads, New York; Crisp, North Carolina; Pepper Pike, Ohio; Boring, Oregon; Hop Bottom, Pennsylvania; Crazy Horse, South Dakota; Finger, Tennessee; Scroggins, Texas; Dutch John, Utah; Greenbackville, Virginia; La Push, Washington; Droop, West Virginia; Embarrass, Wisconsin; and Thumb, Wyoming. Oh, by the way, there's an Agnew in California and several Nixons are dotted around the country from New Jersey and Pennsylvania to Texas.

TWO EXCERPTS FROM THE PHAEDRUS*

Socrates. Tell me; if anyone should go to your friend Eryximachus or to his father Acumenus and should say "I know how to apply various drugs to people, so as to make them warm or, if I wish, cold, and I can make them vomit, if I like, or can make their bowels move, and all that sort of thing; and because of this knowledge I claim that I am a physician and can make any other man a physician, to whom I impart the knowledge of these things"; what do you think they would say?

Phaedrus. They would ask him, of course, whether he knew also whom he ought to cause to do these things, and when, and how much.

Socrates. If then he should say: "No, not at all; but I think that he who has learned these things from me will be able to do by himself the things you ask about?"

Phaedrus. They would say, I fancy, that the man was crazy and, because he had read something in a book or had stumbled upon some medicines, imagined that he was a physician when he really had no knowledge of the art.

Socrates. And what if someone should go to Sophocles or Euripides and should say that he knew how to make very long speeches about a small matter, and very short ones about a great affair, and pitiful utterances, if he wished, and again terrible and threatening ones, and all that sort of thing, and that he thought by imparting those things he could teach the art of writing tragedies?

Phaedrus. They also, I fancy, Socrates, would laugh at him, if he imagined that tragedy was anything else than the proper combination of these details in such a way that they harmonize with each other and with the whole composition.

Socrates. But they would not, I suppose, rebuke him harshly, but they would behave as a musician would, if he met a man who thought he understood harmony because he could strike the highest and lowest notes. He would not say roughly, "You wretch, you are mad," but being a musician, he would say in gentler tones, "My friend, he who is to be a harmonist must know these things you mention, but nothing prevents one who is at your stage of knowledge from being quite ignorant of harmony. You know the necessary preliminaries of harmony, but not harmony itself."

Phaedrus. Quite correct.

Socrates. So Sophocles would say that the man exhibited the preliminaries of tragedy, not tragedy itself, and Acumenus that he knew the preliminaries of medicine, but not medicine itself.

Phaedrus. Exactly so. (Pages 541 - 545)

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*Plato, 1, Euthyphro, Apology, Crito, Phaedo, Phaedrus, translated by Harold North Fowler, Harvard University Press, 1938.

Socrates. I heard, then, that at Naucratis, in Egypt, was one of the ancient gods of that country, the one whose sacred bird is called the ibis, and the name of the god himself was Theuth. He it was who invented numbers and arithmetic and geometry and astronomy, also draughts and dice, and, most important of all, letters. Now the king of all Egypt at that time was the god Thamus, who lived in the great city of the upper region, which the Greeks call the Egyptian Thebes, and they call the god himself Ammon. To him came Theuth to show his inventions, saying that they ought to be imparted to the other Egyptians. But Thamus asked what use there was in each, and as Theuth enumerated their uses, expressed praise or blame, according as he approved or disapproved. The story goes that Thamus said many things to Theuth in praise or blame of the various arts, which it would take too long to repeat; but when they came to the letters, "This invention, O king," said Theuth, "will make the Egyptians wiser and will improve their memories; for it is an elixir of memory and wisdom that I have discovered." But Thamus replied, "Most ingenious Theuth, one man has the ability to beget arts, but the ability to judge of their usefulness or harmfulness to their users belongs to another; and now you, who are the father of letters, have been led by your affection to ascribe to them a power the opposite of that which they really possess. For this invention will produce forgetfulness in the minds of those who learn to use it, because they will not practise their memory. Their trust in writing, produced by external characters which are no part of themselves, will discourage the use of their own memory within them. You have invented an elixir not of memory, but of reminding; and you offer your pupils the appearance of wisdom, not true wisdom, for they will read many things without instruction and will therefore seem to know many things, when they are for the most part ignorant and hard to get along with, since they are not wise, but only appear wise."

Phaedrus. Socrates, you easily make up stories of Egypt or any country you please.

Socrates. They used to say, my friend, that the words of the oak in the holy place of Zeus at Dodona were the first prophetic utterances. The people of that time, not being so wise as you young folks, were content in their simplicity to hear an oak or a rock, provided only it spoke the truth; but to you, perhaps, it makes a difference who the speaker is and where he comes from, for you do not consider only whether his words are true or not.

Phaedrus. Your rebuke is just; and I think the Theban is right in what he says about letters.

Socrates. Writing, Phaedrus, has this strange quality, and is very like painting; for the creatures of painting stand like living beings, but if one asks them a question, they preserve a solemn silence. And so it is with written words; you might think they spoke as if they had intelligence, but if you question them, wishing to know about their sayings, they always say only one and the same thing. And every word, when once it is written, is bandied about, alike among those who understand and those who have no interest in it, and it knows not to whom to speak or not to speak; when ill-treated or unjustly reviled it always needs its father to help it; for it has no power to protect or help itself.

Phaedrus. You are quite right about that, too.

Socrates. Now tell me; is there not another kind of speech, or word, which shows itself to be the legitimate brother of this bastard one, both in the manner of its begetting and in its better and more powerful nature?

Phaedrus. What is this word and how is it begotten, as you say?

Socrates. The word which is written with intelligence in the mind of the learner, which is able to defend itself and knows to whom it should speak, and before whom to be silent.

Phaedrus. You mean the living and breathing word of him who knows, of which the written word may justly be called the image.

Socrates. Exactly... (pages 561 - 567)

BOOK REVIEW

The Year of the Whale, by Victor B. Scheffer; Scribners, 1967. $6.95. Paper, $1.45.

Reviewed by John Paull

> We humans like to classify wild animals as "good" or "bad." By labeling them, we fit them neatly into an arrangement; we bring a degree of order to a natural world that seems at times unorganized and frightening. We pass quickly judgment on the rat; we call him "vicious, filthy, sly" - and we avoid the burden of understanding his life. (p. 46)

Over the centuries the sperm whale has been a creature of romance and mystery, looming large in the folklore of the sea; but now, with the sophistication and efficiency of twentieth century hunting techniques, it is on the verge of extinction. Victor Scheffer, subjectively viewing the world's largest known form of life, poetically describes the first year in the life of Little Calf, the 14-foot-long offspring of a sperm whale. He mingles sentiment with hard fact acquired through years of research on the cetaceans.

The calf is born early in September and it follows its mother like a shadow, feeding as often as possible on her rich milk which adds a daily seven pounds to its already considerable weight. The harem moves relentlessly in search of food, led by a ferocious and jealous bull.

> ...Little Calf /is/ fascinated by the actions of the harem bull, the great black sixty-ton beast who guards the perimeter of the family circle. The bull is often absent for an hour or more on some mysterious errand. Where does he go so quickly in broad daylight? Down, down, on a long, slanting course through the zones of green and purple twilight to utter blackness below. (p. 19)

There is the occasional challenge to the leadership by young bulls, anxious to flex their muscles and test their growing strength, and the awesome power of the teeth and tail of these huge creatures becomes apparent.

> The young whale turns on his left side and charges, clapping his jaw violently, forcing each tooth with a smash into the firm white socket of the upper gum ... The first impact of the bodies with a total mass of a hundred tons throws a geyser of green water into the sky. (pp. 92-93)

At the end of the battle the defeated young bull limps away to the rear of herd - a smashed jaw and broken ribs carrying the memory of the test. Next year he will try again.

Little Calf and the herd keep constantly on the move, communicating

with each other in "the sea of total sound," by means of a "variety of whistles, squeaks, ticks, and clucks." Always they are followed by darting petrels, and there is the occasional red-faced cormorant. Scheffer presents a feast of facts for the interested layman: the sperm whale's tooth weighs half a pound; the heart weighs 300-400 pounds, and beats 20 times a minute; the blubber is not just for warmth but acts also as an energy store, and the whale can go for six months without food if need be.

The migration of the sperm whales remains a mystery, now do they find their way around the globe?

> No man gives the answer....The future biologist will look at the magnetism of the earth (the north-and-southness), the Coriolus Force (the mechanical effect of rotation), the azimuth of the sun at the season and its polarized light, the taste and temperature of the water, the flow of the prevailing winds, the contours of the sea floor, and position of the celestial bodies. He will ask: What do all these....signs mean to whales? (p. 121)

Whatever method they use, the whales' navigation is faultless as they find their way from ocean to ocean. But their path is filled with danger, and not all will see a new year. Stormy seas threaten to strand them on beaches, to wait in vain for the returning tide. Crippling diseases follow minor cuts and bruises. And, of course, they are at the mercy of the whale hunter.

It is man who is causing irreparable damage to the species. He values the whale because of the hundred uses to which he can put its body. The history of whaling is grisly, yet fascinating. It began with early men stalking their great prey with spears to which were tied large floats of wood. The speared victim tired after several days of pulling the floats, and the hunters mercifully delivered the coup de grace. A change in hunting technique came about when a hunter accidentally failed to clean his spear; the rotten meat clinging to the spear brought death more quickly to the next whale.

> With each invention of a better kind of boat and a better kind of spear, the pursuit of whales was carried farther from shore. When at last in the 1860s Svend Foyn perfected the harpoon with a bomb in its head, he opened the last century of whaling. He patented his bomb on Christmas Eve and wrote in his diary, "I thank Thee, O Lord. Thou alone hast done all." (p. 145)

With the 20th century came the spotter plane, and the whale is threatened with extinction. International agreement between the whaling nations is urgently needed to restore the balance between man and the whale.

> ...if we will not accept the responsibility for the wise use of the new weapons we will be cursed by future generations as the people who destroyed the greatest creatures that ever lived. (p. 147)

Scheffer reiterates the problem with a poignant example:

> Only twenty-seven years after the discovery of Alaska the last sea cow was clubbed to death by a hunter in the shallows of the Bering Sea. It weighed perhaps four or five tons and it was the only mammal outside of the tropics that lived on seaweed. We shall never know the secrets of its life: how it survived the freezing winters, how it dealt with the hazard of salty food, what defenses it raised against its enemies, and all the other factors of its body structures and habits. Men will never get insight into the processes of their own lives through study of those of the sea cow.
>
> All species, and in particular the specialized ones - the queer ones - are treasure houses from which man will increasingly draw understanding. In the very complexity of the animal lies its great value. No team of engineers, no matter how great the research budget, will ever duplicate a single whisker of a sea cow. (p. 147)

We shall never fully understand the secrets of the sperm whale's life, and of course most of us will never see one. But Scheffer has taken on the burden of understanding as much as is known, and, in doing so, has helped bridge a gap between man and an ancestral relative struggling for its very existence.

This book reminds us, as we rush through the technological age, to look, now and then, over our shoulder.

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1970 - 1971

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